

## CLAIMS

We claim:

1           1.     A breathable polypropylene/filler film comprising:  
2                     an impact copolymer polypropylene precursor film; and  
3                     a filler present in said precursor film in the range of from about 20%  
4                     to about 70% by weight, based on the total weight of said film,  
5                     wherein said film has a dart impact strength in the range of from about 100  
6                     to about 300 grams,  
7                     wherein said film has an Elmendorf tear strength in the range of from about  
8                     20 to about 300 grams,  
9                     wherein said film has a WVTR in the range of from about 100 to about  
10                    10,000 gm/m<sup>2</sup>/24 hrs at 37.8°C, and  
11                    wherein said film has an MD or TD elongation in the range of from about  
12                    150% to about 550%.

1           2.     The breathable polypropylene/filler film as defined in Claim 1 wherein  
2                   said impact copolymer polypropylene film is selected from a group consisting of a  
3                   random copolymer polypropylene, an impact copolymer polypropylene, a  
4                   metallocene catalyzed polypropylene, and combinations thereof.

1           3.     The breathable polypropylene/filler film as defined in Claims 1 or 2,  
2     wherein the filler is selected from the group consisting of calcium carbonate, talc,  
3     clay, kaoline, silica, diatomaceous earth, magnesium carbonate, barium carbonate,  
4     magnesium sulfate, barium sulfate, calcium sulfate, aluminum hydroxide, zinc oxide,  
5     magnesium hydroxide, calcium oxide, magnesium oxide, titanium oxide, alumina,  
6     mica, glass powder, zeolite, silica clay, and combinations thereof.

1           4.     The breathable polypropylene/filler film as defined in Claim 1, wherein  
2     said filler is calcium carbonate, said calcium carbonate being present in said film in  
3     the range of from about 30% to about 60% by weight, based on the total weight of  
4     said film.

1           5.     The breathable polypropylene/filler film as defined in Claim 1, wherein  
2     said film additionally includes at least a second polymer component selected from  
3     the group consisting of low density polyethylene, linear low density polyethylene,  
4     metallocene catalyzed polyethylene, styrene-isoprene-styrene, styrene-butadiene-  
5     styrene, ethylene propylene elastomeric polymers, ethylene propylene diene  
6     elastomeric polymers, and combinations thereof.

1           6.     The breathable polypropylene/filler film as defined in Claim 1, wherein  
2     the film is laminated to a non-woven polymeric material by a method selected from

1 the group consisting of adhesive lamination, heat lamination, ultrasonic lamination,  
2 and combinations thereof.

1 7. The breathable polypropylene/filler film as defined in Claim 1 or Claim  
2 6 wherein said film or said combination of film and non-woven polymeric material  
3 is formed into a fabricated article selected from the group consisting of diapers,  
4 adult incontinence devices, feminine hygiene articles, surgical garments, surgical  
5 drapes, sportswear, industrial apparel, house wrap, filtration media, roofing  
6 components, and controlled atmosphere packaging.

1           8     A breathable polypropylene/filler film comprising:  
2                     an random copolymer polypropylene precursor film; and  
3                     a filler present in said precursor film in the ratio with said  
4                     polypropylene in the range of about 30% to about 60% by weight, based on  
5                     the total weight of said film,  
6                     wherein said film has a dart impact strength in the range of from 100 -- 300  
7     grams,  
8                     wherein said film has an Elmendorf tear strength in the range of from about  
9     20 to about 300 grams,  
10                    wherein said film has a WVTR in the range of from about 100 to about  
11     10,000 g/m<sup>2</sup>/24 hr, and  
12                    wherein said film has an MD or TD elongation in the range of from about  
13     150% to about 550%.

1 *sub B1* 9. A method of making a microporous breathable film comprising the  
2 steps of:

3 selecting a film forming ~~a~~ polyolefin precursor, said polyolefin  
4 precursor having polypropylene as a majority component;

5 blending said film forming polyolefin precursor with a filler which is a  
6 rigid material having a low affinity for the polyolefin precursor and a lower elasticity  
7 than the polyolefin precursor, and having a non-smooth hydrophobic surface such  
8 that the filler is about 30% to about 70% of the combined weight of the filler and the  
9 polyolefin precursor;

10 combining said polyolefin precursor/filler blend with an additive  
11 selected from a group including a plastomer, an elastomer, a styrenic block co-  
12 polymer, a rubber or a combination thereof; and

13 stretching the combination of said blended polyolefin/filler blend and  
14 said additive to form interconnected voids.

1 10. The method as defined in Claim 9 wherein said step of stretching the  
2 combination uses interdigitating grooved rollers.

1 11. The method as defined in Claim 10 wherein said interdigitating  
2 grooved rollers are positioned in a direction selected from the group consisting of  
3 machine direction (MD), transverse direction (TD), and a combination thereof.

1           12.    The process as defined in Claim 9 wherein said film forming polyolefin  
2 precursor is selected from the group consisting of an impact copolymer  
3 polypropylene, a random copolymer polypropylene, and a combination thereof.

1           13.    The method as defined in Claim 9 wherein said filler is selected from  
2 the group consisting of calcium carbonate, talc, clay, kaoline, silica, diatomaceous  
3 earth, magnesium carbonate, barium carbonate, magnesium sulfate, barium sulfate,  
4 calcium sulfate, aluminum hydroxide, zinc oxide, magnesium hydroxide, calcium  
5 oxide, magnesium oxide, titanium oxide, alumina, mica, glass powder, zeolite, silica  
6 clay and combinations thereof.

106 ✓ 1           14.    The method as defined in Claim 9 further including the step of  
2 laminating the microporous breathable film to a non-woven polymer.

1           15. The method as defined in Claim 14 further including the step of  
2 forming said combination of microporous breathable film and non-woven polymer  
3 into an article selected from the group consisting of <sup>1st</sup>diapers, <sup>1st</sup>adult incontinence  
4 devices, <sup>1st</sup>feminine hygiene articles, <sup>2nd</sup>surgical garments, surgical drapes, sportswear,  
5 industrial apparel, house wrap, filtration media, roofing components, and controlled  
6 atmosphere packaging.

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